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Application No: 10584367 Version No: 1.1

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SEQUENCE LISTING

<110> Imperial Innovations Limited
Tang, Christoph M

<120> Identification of Antigenically Important Neisseria Antigens by
Screening Insertional Mutant Libraries with Antiserum

<130> 06-451

<140> 10/584,367

<141> 2006-07-26

<150> GB04/005441

<151> 2004-12-23

<150> PCT/GB04/005441

<151> 2004-12-23

<160> 56

<170> PatentIn version 3.3

<210> 1

<211> 2628

<212> DNA

<213> Neisseria meningitidis (group B)

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c c c g a a g c a a	a a g c g g a a a a	a c c g g c c g t t	c g a c c c g a a c	c t g t a c c c g c	t g c a a a t a c t	960
g c c g c a t c g g	a a a c c g t g c	c g a a t c c g c c	c c c c a a g a a g	c c g c c g t t c	t g c c a t c g a c	1020
a c g c c g a c c g	a c g a a a c c g g	t a a c g c c g t t	t c c g a a c c t g	t c g a a c a g g t	t t c t g c c g a a	1080
g a a g a a a c c g	a a a g c g g a c t	g t t t g a c g g t	c t g t t c g g c g	g t t c g t a c a c	c t t g c t g c t t	1140
g c c g g c g g a g	g c g c g g c a t t	a a t c g c c c t g	c t g c t g c t t t	t g c g c c t t g c	c c a a t c c a a a	1200
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g a c g a c g g c a	t a g a a a t c a c	c t t t g c c g a a	g t c g a a a c t c	c g g c a a c g c c	c g a a c c c g c t	1320
c c g a a a a a c g	a t g t a a a c g a	c a c a c t t g c c	t t a g a t g g g g	a a t c t g a a g a	a g a g t t a t c g	1380
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a c c c a a a a a c	g c g c g g a t g c	c g a t t g g a a c	g c c a t c g a a t	c c a c a g a c a g	c g t g t a c g a g	1560
c c c g a g a c c t	t c a a c c c g t a	c a a c c c t g t c	g a a a t c g t c a	t c g a c a c g c c	c g a a c c g g a a	1620
t c t g t c g c c c	a a a c t g c c g a	a a a c a a a c c g	g a a a c c g t c g	a t a c c g a t t t	c t c c g a c a a c	1680
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g c c g a a g t c c	a a a c a c c g g a	a g a g t t g c a c	g a t t t c c t g a	a a g t g t a c g a	a a c c g a t g c c	1860
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t t g c t t c a a c	c t g c c g a a g c	a c c g t c c g t t	g a g g a a a a t a	t a a c g g a a a c	c g t t g c c g a a	1980
a c a c c c g a c t	t c a a c g c c a c	c g c a g a c g a t	t t g t c c g c a t	t a c t t c a a c c	t t c t a a a g t a	2040
c c t g c c g t t g	a g g a a a a t g c	a g c g g a a a c c	g t t g c c g a t g	a t t t g t c c g c	a c t g t t g c a a	2100
c c t g c t g a a g	c a c c g g c c g t	t g a g g a a a a t	g t a a c g g a a a	c c g t t g c c g a	a a c a c c c g a t	2160
t t c a a c g c c a	c c g c a g a c g a	t t t g t c c g c a	t t a c t t c a a c	c t t c t g a a g c	a c c t g c c g t t	2220
g a g g a a a a t g	c a g c g g a a a c	c g t t g c c g a t	g a t t t g t c c g	c a c t g t t g c a	a c c t g c t g a a	2280
g c a c c g g c c g	t t g a g g a a a a	t g c a g c g g a a	a t c a c t t t g g	a a a c g c c t g a	t t c c a a c a c c	2340
t c t g a g g c a g	a c g c t t t g c c	c g a c t t c c t g	a a a g a c g g c g	a g g a g g a a a c	g g t a g a t t g g	2400
a g c a t c t a c c	t c t c g g a a g a	a a a t a t c c c a	a a t a a t g c a g	a t a c c a g t t t	c c c t t c g g a a	2460
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a t c g g c g a c c	g c g a t g c c g c	t g c c g a g a c a	g t g c a g a a a t	t g c t g g a a g a	a g c g g a a g g c	2580

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2628

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<213> Neisseria meningitidis (group B)

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Tyr	Ile	Leu	Lys	Asn	Asn	Arg	Gln	Ile	Lys	Leu	Ile	Ala	Ala	Ser	Val
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Ile	Gln	Ser	Asn	Leu	Asp	Glu	Pro	Phe	Ser	Gly	Ser	Ile	Thr	Val	Thr
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Gly	Glu	Glu	Ala	Lys	Ala	Leu	Leu	Gly	Gly	Gly	Ser	Val	Thr	Val	Ser
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Glu	Lys	Gly	Leu	Thr	Ala	Lys	Val	His	Lys	Leu	Gly	Asp	Lys	Ala	Val
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Ile	Ala	Val	Ser	Ser	Glu	Gln	Ala	Val	Arg	Asp	Pro	Val	Leu	Val	Phe
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Arg	Ile	Gly	Ala	Gly	Ala	Gln	Val	Arg	Glu	Tyr	Thr	Ala	Ile	Leu	Asp
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Pro	Val	Gly	Tyr	Ser	Pro	Lys	Thr	Lys	Ser	Ala	Leu	Ser	Asp	Gly	Lys
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Ala	Lys	Ala	Leu	Arg	Lys	Thr	Asp	Lys	Lys	Asp	Ser	Ala	Asn	Ala	Ala
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Thr Val Lys Gln Ile Ala Ala Ala Ile Arg Pro Lys His Leu Thr Leu
210 215 220

Glu Gln Val Ala Asp Ala Leu Leu Lys Ala Asn Pro Asn Val Ser Ala
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His Gly Arg Leu Arg Ala Gly Ser Val Leu His Ile Pro Asn Leu Asn
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Arg Ile Lys Ala Glu Gln Pro Lys Pro Gln Thr Ala Lys Pro Lys Ala
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Glu Thr Ala Ser Met Pro Ser Glu Pro Ser Lys Gln Ala Thr Val Glu
275 280 285

Lys Pro Val Glu Lys Pro Glu Ala Lys Val Ala Ala Pro Glu Ala Lys
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Ala Glu Lys Pro Ala Val Arg Pro Glu Pro Val Pro Ala Ala Asn Thr
305 310 315 320

Ala Ala Ser Glu Thr Ala Ala Glu Ser Ala Pro Gln Glu Ala Ala Ala
325 330 335

Ser Ala Ile Asp Thr Pro Thr Asp Glu Thr Gly Asn Ala Val Ser Glu
340 345 350

Pro Val Glu Gln Val Ser Ala Glu Glu Glu Thr Glu Ser Gly Leu Phe
355 360 365

Asp Gly Leu Phe Gly Gly Ser Tyr Thr Leu Leu Leu Ala Gly Gly Gly
370 375 380

Ala Ala Leu Ile Ala Leu Leu Leu Leu Leu Arg Leu Ala Gln Ser Lys
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Leu Ala Leu Asp Gly Glu Ser Glu Glu Glu Leu Ser Ala Lys Gln Thr		
450	455	460
Phe Asp Val Glu Thr Asp Thr Pro Ser Asn Arg Ile Asp Leu Asp Phe		
465	470	475 480
Asp Ser Leu Ala Ala Ala Gln Asn Gly Ile Leu Ser Gly Ala Leu Thr		
485	490	495
Gln Asp Glu Glu Thr Gln Lys Arg Ala Asp Ala Asp Trp Asn Ala Ile		
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Glu Ser Thr Asp Ser Val Tyr Glu Pro Glu Thr Phe Asn Pro Tyr Asn		
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Pro Val Glu Ile Val Ile Asp Thr Pro Glu Pro Glu Ser Val Ala Gln		
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Thr Ala Glu Asn Lys Pro Glu Thr Val Asp Thr Asp Phe Ser Asp Asn		
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Pro Ala Ser Pro Ser Gly Leu Ala Gly Phe Leu Lys Ala Ser Ser Pro		
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Glu Thr Ile Leu Glu Lys Thr Val Ala Glu Val Gln Thr Pro Glu Glu		
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Leu His Asp Phe Leu Lys Val Tyr Glu Thr Asp Ala Val Ala Glu Thr		
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Thr Val Ala Glu Thr Pro Asp Phe Asn Ala Thr Ala Asp Asp Leu Ser
660 665 670

Ala Leu Leu Gln Pro Ser Lys Val Pro Ala Val Glu Glu Asn Ala Ala
675 680 685

Glu Thr Val Ala Asp Asp Leu Ser Ala Leu Leu Gln Pro Ala Glu Ala
690 695 700

Pro Ala Val Glu Glu Asn Val Thr Glu Thr Val Ala Glu Thr Pro Asp
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Phe Asn Ala Thr Ala Asp Asp Leu Ser Ala Leu Leu Gln Pro Ser Glu
725 730 735

Ala Pro Ala Val Glu Glu Asn Ala Ala Glu Thr Val Ala Asp Asp Leu
740 745 750

Ser Ala Leu Leu Gln Pro Ala Glu Ala Pro Ala Val Glu Glu Asn Ala
755 760 765

Ala Glu Ile Thr Leu Glu Thr Pro Asp Ser Asn Thr Ser Glu Ala Asp
770 775 780

Ala Leu Pro Asp Phe Leu Lys Asp Gly Glu Glu Glu Thr Val Asp Trp
785 790 795 800

Ser Ile Tyr Leu Ser Glu Glu Asn Ile Pro Asn Asn Ala Asp Thr Ser
805 810 815

Phe Pro Ser Glu Ser Val Gly Ser Asp Ala Pro Ser Glu Ala Lys Tyr
820 825 830

Asp Leu Ala Glu Met Tyr Leu Glu Ile Gly Asp Arg Asp Ala Ala Ala
835 840 845

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870

875

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<212> DNA

<213> *Neisseria meningitidis* (group B)

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Asp Ala Val Thr Phe Ser Tyr Leu Pro Gly Gln Lys Phe Asp Leu Pro
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Met Phe Ala Leu Phe Gly Arg Leu Leu Ser Leu Arg Gly Glu Asn Gly
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```

Gln Gln Gln Lys Ile Leu Gln Glu Thr Gly Phe Leu Thr Val Glu Ser
35             40             45

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```

His Gln Tyr Glu Arg Gly Trp Phe Thr Ser Met Glu Thr Thr Val Ile
50             55             60

```

```

Arg Leu Lys Pro Glu Leu Leu Asn Asn Ala Arg Lys Tyr Leu Pro Asp
65             70             75             80

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Asn Leu Lys Thr Val Leu Glu Gln Pro Val Thr Leu Val Asn His Ile
85             90             95

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Thr His Gly Pro Phe Ala Gly Gly Phe Gly Thr Gln Ala Tyr Ile Glu
100            105            110

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Thr Glu Phe Lys Tyr Ala Pro Glu Thr Glu Lys Val Leu Glu Arg Phe
115            120            125

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145 150 155 160

Leu Ser Gly Ile Arg Leu His Trp Glu Gly Leu Thr Gly Glu Thr Val
165 170 175

Tyr Gln Lys Gly Phe Lys Ser Tyr Arg Asn Gly Tyr Asp Ala Pro Leu
180 185 190

Phe Lys Ile Lys Leu Ala Asp Lys Gly Asp Ala Ala Phe Glu Lys Val
195 200 205

His Phe Asp Ser Glu Thr Ser Asp Gly Ile Asn Pro Leu Ala Leu Gly
210 215 220

Ser Ser Asn Leu Thr Leu Glu Lys Phe Ser Leu Glu Trp Lys Glu Gly
225 230 235 240

Val Asp Tyr Asn Val Lys Leu